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ABSTRACT

Results of an evaluation of the 1981-82 Public Law 89-313 program, "Supplementary Services for Previously Non-Public-School Institutionalized Students," are presented in this report. The program was operated by the Division of Special Education of the New York City public schools and served 527 students (6-21 years old) in 227 schools, including community schools, high schools, a school for the deaf, special education schools, and an approved work site. The report's introduction describes how the program helped students who were formerly educated in State-operated or State-supported schools to adapt to public school special education. Approximately 50 percent of these students were emotionally disturbed and 30 percent were mentally retarded. Chapter 2 documents the overall level of program implementation by focusing on facilities, staff, and levels of services provided. Chapter 3 presents evaluation findings for the program's four subcomponents: regionalized services, citywide services, hearing handicapped services, and placement and referral services for the handicapped. These findings focus on activities, resource materials, budget problems, promising techniques, and attainment of objectives, and are based on analyses of pupil achievement data. As is indicated in the report's final chapter, the program is judged to have met or exceeded its objectives, but a number of suggestions are offered for improving resource allocation, use of supplies, staff utilization, and record keeping. (WAM)

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ED227194

O.E.E. EVALUATION REPORT

October, 1982

P.L. 89-313
SUPPLEMENTARY SERVICES
FOR PREVIOUSLY NON-PUBLIC-
SCHOOL INSTITUTIONALIZED
STUDENTS
1981-82

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A SUMMARY OF THE EVALUATION FOR THE 1981-1982 SUPPLEMENTARY SERVICES FOR PREVIOUSLY NON-PUBLIC-SCHOOL INSTITUTIONALIZED STUDENTS

This program, which was operated by the Division of Special Education of the New York City public schools under a P.L. 89-313 entitlement grant, was designed to assist students who were formerly educated in state-operated or state-supported schools adapt to public school special education. Materials and personnel services were delivered through four components and four subcomponents which were developed to meet the particular needs of these pupils as specified in their individualized educational plans. Approximately two-thirds of the program budget was used for supplementary instructional materials and one-third for direct-service personnel.

The program served a total of 527 students in 227 schools, which included community schools, high schools, a special school for the deaf, special education schools, and approved work sites. Approximately 50 percent of the students were emotionally disturbed and 30 percent mentally retarded; the agerange was from six to 21.

Analyses of data gathered to evaluate the components and subcomponents of this program indicated that most of the criteria set for the program objectives were either met or exceeded. Students demonstrated positive growth in communication, mathematics, school-related behaviors, self-help and societal/community-living skills, social interactions, and vocational competencies. In addition, observations and interviews indicated that, in most cases, program services met the individual needs of the students and supplemented basic instructional activities. Program services were effectively integrated into individualized lessons and contributed to the educational adjustment and advancement of eligible students. Delays in funding, implementation, and the delivery of materials detracted somewhat from overall pupil achievement.

Both quantitative data on pupil achievement and qualitative data from interviews and observations indicated that the 1981-82 program was more completely and effectively implemented than previous program cylces. The data suggest that this may be attributable to the increased emphasis upon appropriate materials rather than direct-service personnel.

The major recommendations of the evaluation are as follows:

--Since evidence suggests that the purchase of supplementary instructional supplies seems to be a more expeditious and effective use of these entitlement funds than personnel services, a substantial portion of the program budget should continue to be allocated for the former.

--To ensure the use of program-purchased materials for optimal pupil benefit, funds should also be allocated for staff to train and monitor classroom teachers.

--Efforts should be made for early project approval and delivery of supplies to ensure that services are planned and provided in a timely manner.

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I. INTRODUCTION

This report presents an evaluation of the 1981-82 Public Law 89-313 program entitled Supplementary Services for Previously Non-Public-School Institutionalized Students. This program, operated by the New York City Public Schools' Division of Special Education (D.S.E.) under an entitlement grant, was designed to assist students formerly educated in state-operated or -supported schools adapt to public school special education. Program services were developed to meet the particular needs of these pupils as specified in their individualized educational plans (I.E.P.) and in accordance with such factors as unique learning style and functional skill level.

The program was comprised of four components and four subcomponents identified below:

Component 1.0. Regionalized Services
- --Subcomponent 1.1. Computerized Mathematics Management
- --Subcomponent 1.3. Materials*

Component 2.0. Citywide Services

Component 3.0. Hearing Handicapped Services
- --Subcomponent 3.1. Deaf/Mentally Retarded
- --Subcomponent 3.2. Hearing Impaired

Component 4.0. Placement and Referral Center for the Handicapped

In addition, the grant funded a professional staff member at headquarters to support program implementation. (In most sections of this report, the components/subcomponents will be referred to by their numerical designation.)

*Subcomponent 1.2 was deleted through modification.

The program was evaluated through the collection and analysis of quantitative data on pupil achievement and qualitative data on program implementation by the Office of Educational Evaluation (O.E.E.). Data on pupil achievement were collected on O.E.E. data-retrieval forms and included information from a standardized test, two criterion-referenced assessments, a program-designed instrument, and direct pupil observations. Qualitative data were gathered by O.E.E. field consultants during 55 site visits in which they conducted more than 100 classroom observations and staff interviews. Site selection was random and the sample was representative of the program components/subcomponents and students served.

Findings of this report are delineated in four chapters: Chapter II documents the overall level of program implementation focussing on facilities, staff, and levels of service provided; Chapter III presents an analysis of the qualitative and achievement data for each component with a focus on activities, materials, inhibiting factors, promising techniques, and attainment of objectives; Chapter IV describes major conclusions and recommendations based on the results of the evaluation.

II. OVERALL LEVEL OF IMPLEMENTATION

This chapter describes the general level of program implementation in relation to that which was proposed. Across all components/subcomponents, a total of 527 students were served at 227 sites. Approximately 50 percent of these students were emotionally disturbed and 30 percent mentally retarded, with the remainder distributed among the following disabilities: austistic, deaf, hard of hearing, learning disabled, and orthopedically handicapped.

FACILITIES

The program served students in community elementary and junior high schools, high schools, a special school for the deaf, special education schools, and approved work-sites. O.E.E. field consultants reported that these settings were appropriate for instruction: classrooms were well lit; furniture (chairs and tables) was designed to accommodate the students' special needs; and instructional areas were large enough for a variety of teaching activities. Moreover, clearly superior accommodations were apparent at the micro-computer centers (Subcomponent 1.1) and at those schools housing daily-living and pre-vocational skills units (Component 2.0). Each micro-computer center had substantial office space for personnel, instructional materials, and computer hardware. Similarly the pre-vocational skills units were established in spacious classrooms suitable for arranging program-purchased equipment (e.g., refrigerators, washers, dryers, etc.) as model kitchens and home units.

STAFF

Staff consisted of one administrator, eight pedagogs, and six paraprofessionals. Interviews revealed that professional staff were highly experienced, with a minimum of ten years in teaching. All were certified as special education instructors and chosen on the basis of individual expertise as indicated by background and supervisory recommendations. Although the paraprofessionals were relatively inexperienced, they quickly acquired the skills necessary for their positions. In addition to the full-time staff, one part-time educational consultant was hired to develop a school-based curriculum and provide in-service training for Component 3.0.

Program staff indicated that the orientation and pre-program activities were more than sufficient to meet their training needs. The pre- and inservice training of Subcomponent 1.1 was noteworthy; both professional and paraprofessional staff became proficient in micro-computer systems and their applications for student assessment.

LEVEL OF SERVICE

The program supplemented instruction for the target students by providing staff or instructional supplies and equipment designed to assist their adaptation to the public school special education program. Professionals provided direct or indirect instruction to students served by Subcomponent 1.1, Computerized Mathematics Management; Subcomponent 3.1, Deaf/Mentally Retarded; and Component 4.0, Placement and Referral Center for the Handicapped. Educational materials were provided for eligible students in Subcomponent 1.3, Regionalized Services Materials; Component 2.0,

Citywide Services; and Subcomponent 3.2, Hearing Impaired. The actual levels of service varied among components. Components 2.0 and 3.0 were fully implemented and offered all of the proposed activities. Subcomponent 3.1 was singled out by the school's administration and O.E.E. field-consultants as particularly well implemented. Pupils received instruction in communication and self-help skills, developed positive relationships with their teachers and peers, and demonstrated cognitive and social growth.

On the other hand, difficulties were experienced in the implementation of both subcomponents of Component 1.0 due to vendor delays, distribution problems, and faulty equipment. In particular, Subcomponent 1.1 was not completely operative until March, 1982 and offered a limited, though acceptable, range of services to the target students. More serious problems were encountered in Subcomponent 1.3. Although some of the instructional supplies and materials reached the intended destinations, not all pupils received the quantity or quality of materials necessary to effect measurable change. Consequently, achievement data were not collected for these students. Component 4.0 also commenced service later than anticipated (i.e., March, 1982) due to a delay in tax-levy funding for job-training stipends. In spite of the late start, O.E.E. found that the students in this component received superior educational experiences.

The program was administered and supervised by P.L. 89-313 and tax levy-supported personnel. Each of the subcomponents had different management resources which varied in efficiency. Internal project control was

particularly effective in Components 2.0 and 3.0, and positive external supervision was evident in Component 4.0.

III. EVALUATION OF PROGRAM COMPONENTS

This chapter presents the individual evaluation findings for the components and subcomponents of the P.L. 89-313 project. Findings based on the analyses of qualitative data are presented with respect to activities, materials and equipment, promising activities, and inhibiting factors; findings concerning the attainment of objectives for each component are based on the analyses of pupil achievement data.

COMPONENT 1.0. REGIONALIZED SERVICES

Activities

The Regionalized Services component included two subcomponents: Computerized Mathematics (Subcomponent 1.1) and Materials (Subcomponent 1.3). The former served 180 students at 168 sites throughout New York City's five boroughs by developing individual computerized mathematics prescriptions at three regional micro-computer diagnostic centers (Bronx, Brooklyn East, and Queens). The latter subcomponent provided instructional materials to 19 eligible students for whom Subcomponent 1.1 was inappropriate. Thus, Component 1.0 served a total of 199 students. Approximately one-half of these were educated in elementary schools, 16 percent in middle schools, and one-third in high schools. Disabling conditions included: emotional handicap, 29 percent; learning disabilities, 25 percent; mental retardation, 23 percent; orthopedic disabilities, 15 percent; and multiple handicaps, 8 percent. The staff of Subcomponent 1.1 included: one teacher trainer, three teachers of special education/computer programmers (one per center), and two educational paraprofessionals (Bronx and Brooklyn East).

No staff were assigned to Subcomponent 1.3.

Subcomponent 1.1 commenced service with a one-week intensive staff-training course covering the following topics: program eligibility requirements, computer language (Basic), micro-computer operations, mathematics assessment, instructional materials, organizational procedures, and field communications. The training was conducted by a staff teacher trainer who was also responsible for monitoring and supervising program activities.

Direct service for Subcomponent 1.1 began with the distribution of contact letters to teachers which described the program and elicited information on the availability of supplies and students' functional mathematics levels. Based upon these responses, program staff issued appropriate diagnostic tests which were then administered by teachers and returned to the centers for key entry by paraprofessionals. The tests were computer analyzed and individual student prescriptions were generated which included lists of performance objectives for mathematics instruction and associated instructional aids (bibliographic references). When teachers received these prescriptions, they were encouraged to use them for planning activities. As students achieved mastery of the stated objectives, teachers alerted the micro-computer-center staff who, in turn, issued a new survey assessment to determine additional goals. This interactive process continued for the duration of the school year.

To assist teachers in the attainment of the short-term mathematics objectives for students, instructional materials keyed to references in computer-generated perscriptions were distributed by paraprofessionals

as needed. In some instances, on-site visits were made by the teachers/computer programmers in order to facilitate the program's implementation.

Service for Subcomponent 1.3 was initiated by the identification of all P.L. 89-313-eligible students who could not be appropriately served by Subcomponent 1.1. Program personnel contacted the teachers of these students to elicit a list of supplemental instructional materials appropriate to the students' special needs. In most cases, purchase orders reflected these requests. Vendors sent all materials to the Bronx microcomputer center for citywide distribution. In some cases, although the materials were received late in the year, there was enough time to supplement the student's program. In others, little or no material was available for most of the school year.

Materials/Equipment

Three micro-computers were used to implement Subcomponent 1.1, (one per center). A Radio Shack TRS 80 Model II computer purchased with P.L. 89-313 funds during the previous school year (1981) was employed in the Bronx Region; two Atari 800 computers were purchased this cycle for Brooklyn East and Queens. The Science Research Associates' (S.R.A.) Classroom Management System (C.M.S.), Level A (grades 1-3) and Level B (grades 4-8), was the software purchased for all units. Each C.M.S. is a criterion-based diagnostic package which presents specific mathematical skills grouped by instructional areas. Level A includes three major skill concepts with 150 objectives and Level B contains nine main skill concepts with 311 objectives. Each level has several general surveys and specific probes which are paper and pencil tests used for

diagnosis of strengths and weaknesses. In addition, S.R.A. School House Kits and S.R.A. Drill Packs were purchased as instructional aids.

The following types of materials were purchased and received for Subcomponent 1.3: equipment for gross- and fine-motor development; mathematics and reading-readiness books and games; pre-vocational kits; and a series of vocational-development workbooks.

Promising Activities

Conceptually, Subcomponent 1.1 is an innovative and exciting alternative for the instruction of handicapped students. Expansion of this subcomponent from one micro-computer center last year to three for the current year afforded greater program flexibility and increased potential for central-field communications. Closer and more consistent communications resulted in a better match among students needs, computer-based prescriptions, and field-based programs.

Subcomponent 1.3's strength was the potential to provide eligible students with the specific supplemental materials necessary to enhance their instructional program.

Inhibiting Factors

Problems encountered in the implementation of Subcomponent 1.1 concerned program communication, student assessment, and curriculum materials; the transmittal of information from the program to the field did not flow as smoothly as anticipated. In some instances, building principals and special education site supervisors reported that program continuity could have been enhanced by greater clarity and promptness

of communications. Moreover, more frequent site visits by staff programmers and greater initiative by teachers in maintaining central-field contact would have further contributed to improved program success.

Another issue cited by classroom personnel was related to the quality of student assessment and curriculum materials. They reported that the photocopied surveys and probes were often of poor quality (i.e., blurred or light copies). In addition, they suggested that the test's format (i.e., cluttered pages, small answer spaces, and ambiguous illustrations) was not appropriate for students with visual, motor, or perceptual handicaps. Beyond these concerns, many teachers had difficulty in using the prescriptions to develop individual educational plans (I.E.P.) and instructional strategies. More teacher training is needed to ameliorate this problem. Further, many older adolescents found the prescribed materials (i.e., S.R.A. School House Kits and Drill Packs) too immature.

Problems encountered in the implementation of Subcomponent 1.3 included late delivery due to supplier back orders, delayed shipments, and organizational difficulties in the delivery process. In addition, communications between the program and classroom teachers were indirect and limited.

Anaylsis of Achievement Data

To determine whether the program objective for Subcomponent 1.1 was attained, the S.R.A. Probes, criterion-referenced measures of mathematics

skills, were administered to the target students on an on-going basis. The criterion for attainment of the program's objective was mastery of three or more new skills by at least 80 percent of the students receiving computer-prescribed instruction. The criterion was adjusted to two new skills due to the truncation of instructional time resulting from the program's late start. Indeed, the students received approximately one-half of the proposed amount of instruction, as indicated by the median program attendance of 85 days.

Data were reported for 136 (75 percent) of the 180 students served; the remaining participants were either frequently absent or did not receive sufficient instruction to achieve measurable gains. Figure 1 depicts the percentage of students mastering at least two instructional objectives as measured by the S.R.A. Probe. The two-skill goal was attained by almost 85 percent of the students on the Probe Level A and 90 percent on Level B; almost 87 percent attained the goal on Levels A and B combined. Since these percentages exceed the 75 percent criterion, the program objective for Subcomponent 1.1 was attained.

Tables A.1, A.2, and A.3 (See Appendix) present the frequency distributions of the number of mathematics objectives mastered on the Probe, Level A, Level B, and combined, respectively. At least four new objectives (twice the program goal) were mastered by 30 percent of the students on the Level A test, 16 percent on the Level B test, and 25 percent on the two levels combined. Almost one student in ten (8.8 percent) mastered six or more skills on the combined test.

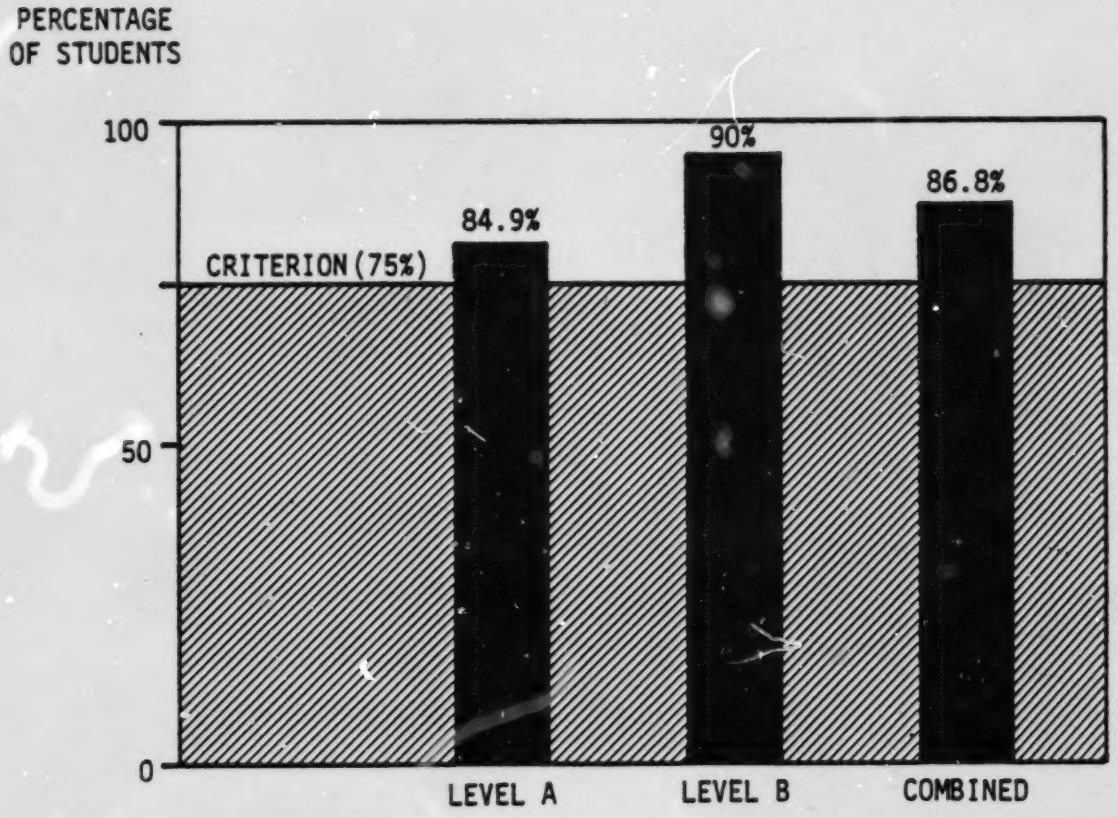

FIGURE 1. PERCENTAGE OF STUDENTS MASTERING AT LEAST TWO MATHEMATICS SKILLS ON THE PROBE (LEVEL A, LEVEL B, AND COMBINED).

COMPONENT 2.0 CITYWIDE SERVICES

Activities

This component served 236 students in 52 sites throughout New York City by providing books, equipment, and supplies to supplement classroom instruction. The target group was heterogeneous ranging in age from five to 21 years and exhibiting a variety of disabilities including limited self awareness, inappropriate behavior, delayed cognitive and social development, and severe language and communication disorders. Specifically, 44 percent were multiply handicapped and 33.5 percent emotionally disturbed, with the remainder equally distributed among the following disability groups: autistic; mentally retarded; and orthopedically impaired. The students received basic instruction in 12 different special education programs. Almost 33 percent were served by Track IV, 16 percent by Teachers Moms, 13 percent by Day Treatment Centers, and 12 percent by Centers for Multiply Handicapped Children. The remainder were distributed among the other Citywide Services programs.

Central D.S.E. personnel (funded through the tax-levy) were responsible for the selection, purchase, and distribution of all instructional materials. Each child's classroom teacher participated in the selection of materials to assure that they were tailored to the students' I.E.P.s. To provide for the specific needs demonstraed by the pupils, the budget was modified in December 1981 reducing allocations for textbooks and increasing those for life skills equipment. Most materials were in the classrooms by the end of the fall term. D.S.E. personnel maintained contact with the classroom teachers throughout the school year to moni-

tor program implementation.

Materials/Equipment

More than 275 different pieces of material in 13 major categories were provided for participants. On average, supplies from two categories were used with each pupil. Table 1 presents a frequency distribution of the categories of materials and equipment employed by the program. More than two-thirds of the students received multi-dimensional and multi-sensory supplements (i.e., audio-visuals, manipulatives, and the hands-on Work Skills Development Material), while the others were provided with more specific types of equipment. The diversity of materials suggests that program personnel receognized individual differences and were responsive to specific student needs.

Promising Activities

Component 2.0 was successfully implemented; the materials and equipment were appropriate for the students and supplemented their instructional program. In particular, professional staff and pupils responded enthusiastically to the pre-vocational and life-skills materials. The Work Skills Development Package provided lower functioning participants with a sequential curriculum and a variety of activities to enhance the educational experience. Similarly, higher-functioning students increased their ability to operate at an independent level through exposure to equipment used in daily living (e.g., large kitchen appliances). Teachers requested, and D.S.E. provided, supplementary materials which met the specific individual needs of program students. Furthermore, on-going

TABLE 1

CATEGORIES OF
PROGRAM MATERIALS/EQUIPMENT PURCHASED
FOR CITYWIDE SERVICES
(COMPONENT 2.0)

Categories	Number[a]	Relative Percent[b]
Audiovisual Equipment	120	30.5
Manipulative Materials	54	13.7
Work Skills Development Materials	53	13.5
Books/Maps/Charts	28	7.0
Hygiene Supplies	26	6.6
Reading Program Kits	23	5.8
Large Appliances	22	5.6
Physical Therapy Equipment	20	5.1
Memory Materials	18	4.6
Language Materials	11	2.8
General Supplies	7	1.8
Life Skills Materials	6	1.5
Office Machines	6	1.5
	394	100.0

[a]Number of materials purchased.

[b]Relative percent of all materials purchased

- Thirteen different categories of materials were purchased suggesting that the individual needs of students were carefully considered.

communication between program staff and classroom teachers assisted in the smooth operation of this component.

Inhibiting Factors

The main problem encountered in program implementation was delay in the delivery of materials due to the above-mentioned budget modification. However, the educational benefits derived from ensuring the appropriateness of these materials justified the truncation of instructional time.

Although D.S.E. staff were diligent in ascertaining the instructional needs of the target students, in some instances insufficient communication with the schools inhibited implementation. Specifically, some teachers did not receive a final list of equipment ordered for their students and this resulted in some confusion at the local-school level. Other teachers reported not receiving a master list of eligible students and the materials provided for them. Some school principals, special education site supervisors, and teachers indicated that it was difficult to acquire this information resulting in delayed or postponed implementation.

Achievement Data

To measure student growth in response to supplementary instruction employing program-purchased materials, the following strands of the Behavioral Characteristics Progression (B.C.P.) were administered on an on-going basis: attendance; promptness; activities of daily living; impulse control; societal/survival skills; task completion; and reasoning. The criterion for attainment of the program's objective was the mastery

of at least one new skill by 80 percent of the students receiving supplementary instructional materials. No modifications of this objective were necessary since full implementation for nearly two-thirds (63.6 percent) of the students was accomplished by the end of the fall term.

Data were collected for all component participants (236). However, due to attrition by frequent absence, discharge from the program, or transcription error, complete achievement data were reported for 188 students (80 percent). Of these, 177 (94 percent) mastered at least one B.C.P. skill; over 50 percent (104 students) mastered at least two. Table A.4 (see Appendix) presents a complete frequency distribution of the number of B.C.P. objectives mastered. Mastery ranged from zero to 14 objectives, with a mean of 2.4. Almost one quarter of the students mastered three or more objectives.

To determine whether mastery varied by type of disability or basic education program, mastery data were analyzed for the two main disability groups and the four special education programs serving the most component students. Approximately 84 percent of the multiply-handicapped and 100 percent of the emotionally-disturbed students achieved the program's objective. In addition, the criterion was met by all the Day Treatment and Teacher Moms pupils, and 86 percent of the participants at the Centers for the Multiply Handicapped and 82 percent of the Track IV students. These data indicate that the criterion was exceeded for all major disability groups and special education programs.

COMPONENT 3.0. HEARING HANDICAPPED SERVICES

Activities

Hearing Handicapped Services was comprised of two subcomponents: Deaf/Mentaliy Retarded (3.1) and Hearing Impaired (3.2). Subcomponent 3.1, recycled from the 1980-81 program, served 12 deaf/mentally retarded students at the School for the Deaf by providing one educational paraprofessional to assist instruction. Subcomponent 3.2 provided educational materials, communication and amplification devices, and funds to repair existing audio-visual equipment for 26 hearing-impaired students in ten schools throughout New York City. Approximately two-thirds of the participants were enrolled in high schools, while the remainder attended junior high schools. These students were served in self-contained special education classes and mainstream (regular) settings, individually and in combination. Over 85 percent of all pupils received instruction in at least one mainstream academic class.

Beginning September 1981, the paraprofessional for Subcomponent 3.1 provided in-class, one-to-one tutorial instruction appropriate to each student's individual needs for an average of 96 minutes per week. Activities focused on: language comprehension, articulation, sign language, finger spelling, and impulse control. In addition, some students were provided training in feeding and eating skills during their breakfast and lunch periods.

Subcomponent 3.2 was coordinated by tax-levy D.S.E. personnel who, in consultation with the classroom teachers, ordered amplification and communication devices and instructional materials and arranged for the repair of inoperative audiovisual equipment needed to optimize the educa-

tional opportunities of target students. Materials were ordered in early fall and all supplies were received by the beginning of the spring term. The coordinators regularly visited the schools to assist in the appropriate use of the materials.

An educational consultant was funded under Subcomponent 3.2 to provide a voluntary, weekly in-service course for teachers in the Ling method of speech instruction. Attendance at these sessions ranged from 15 to 30 teachers, with an average of 25 participants. The Ling method covered the phonetic and phonologic attributes of speech and placed a heavy emphasis on audition. Personnel learned how to incorporate targeted speech sounds into the daily instructional process. Twenty professional staff members completed the course.

Materials/Equipment

Under Subcomponent 3.1 approximately 25 resource books were purchased for the professional library at the School for the Deaf. The topics included curriculum, instructional methods, language development, and sign language. Interviews of school staff indicated that these books were valuable resources that were frequently consulted.

The equipment purchased under Subcomponent 3.2 included: amplification devices, overhead projectors, Polaroid cameras, and teletypewriters. Each student received at least one piece of equipment to assist in the attainment of I.E.P. objectives.

Promising Activities

Subcomponent 3.1 was observed to be exemplary in (1) its individual-

ized tutorial approach, (2) concordance between the program's objectives and the needs of the students, and (3) supplementary materials. In addition, the introduction of the self-feeding program provided the participants with needed life-skills training.

Direct observations of and instructor reports on Subcomponent 2.2 indicated that the audio-amplification and telecommunication devices fostered inter-student and student-teacher interaction and enhanced the quality of the students' educational experiences. The telecommunication devices demonstrated the potential to facilitate interactions among students located at different facilities, thus extending social and interpersonal development. Furthermore, training students on the more sophisticated, state-of-the-art methods of communication better prepares them for functioning in society.

Inhibiting Factors

No major problems were reported by the program staff or observed by O.E.E. field consultants. The component was fully and effectively implemented.

Achievement Data

To measure student mastery of I.E.P. skills in response to the supplementary individualized instruction provided in Subcomponent 3.1, the B.C.P. was administered on an on-going basis. The criterion for attainment of the program's objective was mastery of at least one new skill by 80 percent of the pupils.

Data were reported for all 12 participants. Mastery ranged from zero

to three objectives with an average of 1.5 per student. Eleven (92 percent) of the 12 students mastered at least one new skill; eight students mastered two or three new skills. Thus, the objective was attained. Qualitative analyses revealed that most of the skills mastered related to sign language (i.e., imitation and use of a single sign to express a need). Impulse-control objectives were found to be the most difficult to master.

The objective for Subcomponent 3.2 stated that hearing-handicapped students receiving new or repaired amplification devices would function successfully in the least restrictive environment as measured by attendance, increased appropriate classroom participation, and teacher ratings of academic and social behavior.

A double criterion was proposed for the subcomponent's attendance objective: 90 percent of the target students would remain in the educational mainstream for the full project year and attain a percentage of attendance equal to at least 75 percent. Figure 2 depicts the percentage of students that remained in their educational program (i.e., least restrict environment) for the full school year and the relative percentage of these students attaining the 75 percent attendance goal. Of the 26 students served, 25 (92 percent remained in the same instructional program (i.e., least restrictive environment) for the entire year; the expected value of 90 percent was exceeded. Of these 24 students, 23 (95 percent) achieved at least 75 percent attendance; two-thirds were present at least 90 percent of the time. Table A.5 (see Appendix presents a frequency distribution of the percentage of attendance of all

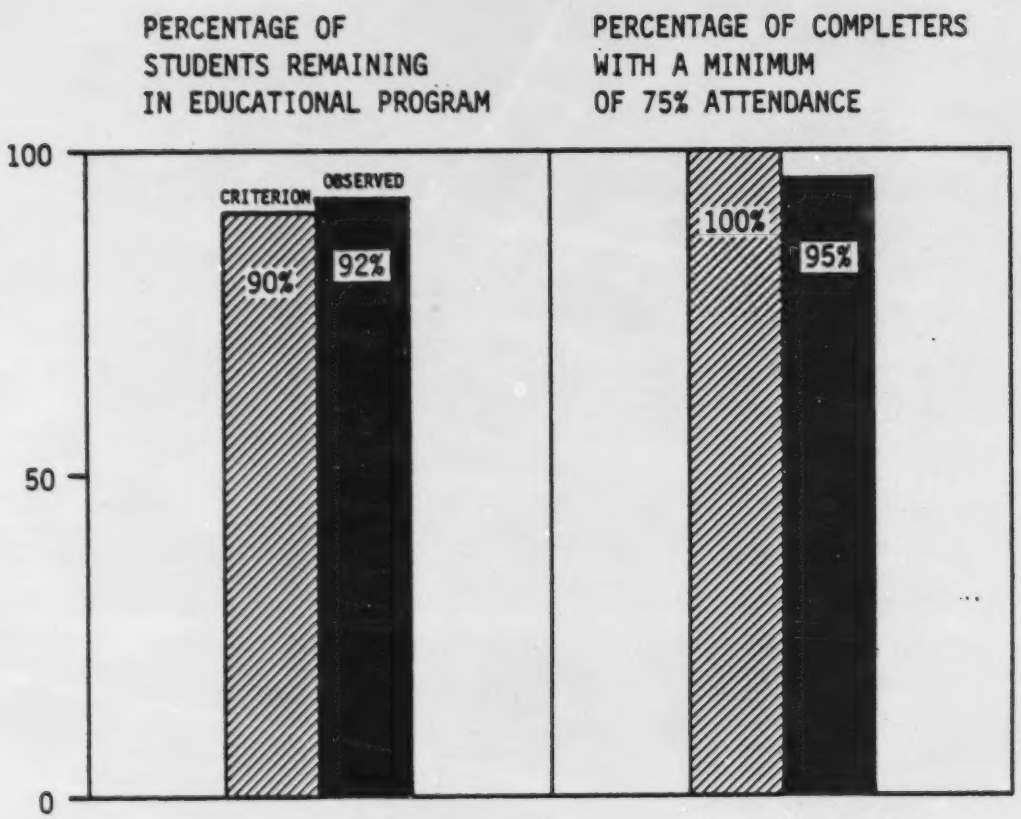

FIGURE 2. PERCENTAGE OF STUDENTS REMAINING IN THEIR EDUCATIONAL PROGRAM AND ATTAINING AT LEAST 75% ATTENDANCE (SUBCOMPONENT 3.2).

eligible students served under Subcomponent 3.2. Overall, the mean percentage attendance was 92 percent.

To determine whether the amplification devices assisted the target students in increasing their appropriate classroom participation, O.E.E. field consultants observed and recorded the students' behavior during classroom instruction. The observers were trained to look for and record six types of student behavior: three that were directed toward the teacher and three that involved peer interactions. The former were talking to teacher (situational appropriate), listening to teacher, and answering teacher's questions; the latter were talking to peer, listening to peer, and looking to peer. These behaviors were selected on the premise that the amplification devices would assist teacher-student communication thereby reducing distracting attention to peers for cues. Accordingly, the multiple criterion for the objective related to increased appropriate classroom participation was a statistically significant increase in teacher-directed student behaviors and a statistically significant decrease in peer-directed student behaviors as measured by pre- and post-classroom observations.

Twenty-four target students were observed in four classes for both pre- and post-observations, for a period of five minutes per class. (Interrater reliability of the procedure was measured at .94). A ten-second momentary-time-sampling procedure was used to standardize observations; that is, the students' behavior was observed and recorded at consecutive ten-second intervals for the five-minute observation period. Thus, a total of 120 observed behaviors were recorded for each student during

the pre- and post-assessment periods.

Pre- and post-assessment data were compared within each of the six categories of behavior through *t* tests for correlated data. (See Table 2.) Statistically significant differences were observed for two of the six categories; one teacher-directed measure and one peer-directed measure. Listening to teacher increased significantly from a mean of 58.5 instances to a mean of 78.1 instances ($t = 2.82$, $df = 23$, $p<.01$) and looking to peer decreased significantly from a mean of 11.9 to a mean of 8.5 ($t = 2.30$, $df = 23$, $p<.05$).

These findings indicate that the students showed improvement in passive participating behavior (i.e., listening to the teacher more and looking at their peers less) but not active participation (i.e., talking to the teacher and answering questions.) This is not surprising since the amplification devices were designed to enhance one-way communication (i.e., teacher to student).

To determine whether the students improved in academic and social behavior, their teachers (special education, resource room, and mainstream) completed the Teacher Rating Scale at the beginning and end of the spring semester. The criterion for this objective was a statistically significant ($p<.05$) increase in mean ratings. The Teacher Rating Scale, which consists of ten items (five measuring academic behavior and five for social behavior) in five-point Likert format, was developed and validated in a study by Gottlieb, Semmel, and Veldman (1978) on the correlates of social status among mentally retarded children. Responses are measured along a continuum of frequency from always (5) to never (1).

TABLE 2

COMPARISON OF PRE- AND POSTTEST SCORES ON
DIRECT OBSERVATIONAL MEASURES OF
STUDENT CLASSROOM PARTICIPATION
(SUBCOMPONENT 3.2)

Type of Behavior	Pre-Test Mean (S.D.)	Posttest Mean (S.D.)	Mean Gain/Loss (S.D.)	t[a]
STUDENT-TEACHER				
Talking to Teacher	3.08 (5.23)	2.95 (5.03)	-.13 (3.43)	-.18ns[b]
Listening to Teacher	58.50 (24.22)	73.13 (21.60)	14.63 (25.44)	2.82**
Answering Teacher's Questions	5.79 (5.97)	6.04 (5.52)	.25 (1.36)	.18ns
STUDENT-STUDENT				
Talking to Peer	5.66 (5.12)	5.08 (6.28)	-.58 (6.52)	-.44ns
Listening to Peer	9.13 (7.17)	9.88 (6.79)	.75 (7.39)	.50ns
Looking to Peer	11.88 (7.36)	8.46 (5.63)	-3.42 (7.28)	-2.30*

*$p<.05$, **$p<.01$

[a] $DF = 29$

[b] Not significant

- After receiving amplification equipment, the hearing-impaired students showed a statistically significant increase in listening to teacher and a concomitant significant decrease in looking to peer. These findings suggest improved understanding of the teacher with reduced reliance upon classmates for cues.

- Active participation (i.e., all other observed behaviors) did not change significantly.

Forty-three teachers (27 mainstream and 16 self-contained) completed both pre- and post-measures for 22 students (three in self-contained special education classes, 16 partially mainstreamed, and three fully mainstreamed). The pre- and post-test means were compared through *t* tests for correlated data. (See Table 3.) Mean academic behavior ratings increased from 16.88 to 17.37, while mean social behavior ratings decreased from 22.09 to 21.14. Both changes were not statistically significant.

The above findings indicate that two of the three criteria employed to determine the attainment of the objective for Subcomponent 3.2 were met or exceeded. Specifically, attendance data indicated that students were successfully educated in the least restrictive environment and observational measures demonstrated an increase in students' appropriate participatory classroom behaviors. Although teacher ratings did not confirm the latter finding, two factors may have been responsible: first, the perception of small behavioral changes may have been masked by the close interactional relationships between pupils and instructors; and second, many of the teacher ratings may have been influenced by a ceiling effect since the pretest values approached the maximum scores. Overall, the data suggest that Subcomponent 3.2 did assist the target students function successfully in the least-restrictive educational enviornment.

Subcomponent 3.2 also included an inservice training component for the teachers of the eligible hearing-handicapped students. The criterion for attainment of the program's goal for in-service training was a statistically significant ($p<.05$) increase in achievement scores on a pre-

TABLE 3

COMPARISON OF PRE- AND POSTTEST SCORES ON
TEACHERS' RATINGS OF STUDENT BEHAVIORS
(SUBCOMPONENT 3.2)

Type of Behavior	Pre-Test Mean (S.D.)	Posttest Mean (S.D.)	Mean Gain/Loss (S.D.)	t[a]
Academic Behaviors	16.88 (3.97)	17.37 (4.39)	.49 (3.55)	.90ns[b]
Social Behaviors	22.08 (2.44)	21.14 (3.11)	-.95 (2.33)	-2.68ns[c]

[a] DF = 42

[b] Not significant

[c] Significant in wrong direction

- After the students received amplification devices there were no significant gains in teachers' ratings of academic and social behavior.

TABLE 4

COMPARISON OF PRE- AND POSTTEST SCORES
ON TEACHERS' IN-SERVICE ACHIEVEMENT TEST
(SUBCOMPONENT 3.0)

	Pre-test	Posttest	Gain	t
Mean	11.05	16.40	5.35	6.18**
S.D.	3.57	1.50		
N	20	20		

**$p<.01$

• In response to in-service training, participating teachers showed a significant mean gain on a test of the Ling method of speech instruction.

and post-test measure of teacher's knowledge of speech instruction through the Ling method. An instructor-developed, 20-item multiple-choice test was administered to all participants at the initial and final sessions of the course. Table 4 presents the results of the t test for correlated means applied to these data. Achievement scores increased from a raw-score mean of 11.05 to 16.40, a mean gain (5.35) that was statistically significant ($t = 6.18$, $df = 19$, $p<.01$). Thus, the teachers demonstrated a significantly greater understanding of the Ling method of speech instruction after attending the inservice course.

COMPONENT 4.0 PLACEMENT AND REFERRAL CENTER FOR THE HANDICAPPED

Activities

This component provided supplemental work experiences for 30 students at 20 locations throughout New York City. Over half of these pupils were emotionally disturbed, with the remainder distributed among the following disability groups: learning disabled; mentally retarded; and orthopedically impaired. Mathematics and reading abilities ranged from readiness through high school level; approximately three-quarters were functionally literate, that is, reading on or above the fourth-grade level. Staff for the program consisted of one teacher assigned as coordinator and one educational paraprofessional. The coordinator was responsible for overall organization and implementation, including site visits, while the paraprofessional was office-based and performed administrative tasks such as processing payroll and routine paperwork.

Student selection commenced in fall, 1981 with the identification of

102 potential participants. All candidates were required to have written parental consent prior to the selection process. Selection criteria included teacher recommendations, program evaluation, and congruence between the students' job preferences and skills and the requirements of the available job-training positions. Screening was a two-step process: first classroom teachers selected the candidates most likely to succeed on the basis of level of maturity, school records (academic, social, and attendance), motivation, and potential to benefit from the program; final selection was made by program staff based on mathematics and clerical skills tests, completion of job applictions, and personal interview data (i.e., appearance and personality factors). By February, 1982, 30 students were selected for training.

All participants attended a pre-employment meeting and received their work assignments, payroll schedules, half-fare transportation applications, and a pamphlet designed for individuals entering the work force (My Job Campaign). Due to a delay in tax-levy funding of training stipends, training placements were not initiated until March, 1982. Participants worked after school for approximately three to four hours per day, five days per week, for a stipend equivalent to the minimum hourly wage ($3.35). Training positions were hospital aide, library assistant, maintenance worker, messenger, and office clerk. In addition to training, the program assisted the students in career planning through personal interviews and workshops. Topics included proper grooming, appropriate work behaviors, interview techniques, compensation issues (i.e., salary, benefits, and taxes), and vocational training programs. These contacts also served

to resolve problems and encourage greater pupil/program feedback.

The coordinator maintained close contact with school staff. The principals reported that they were furnished with program information through on-site visits (23 schools and 34 job training locations) or telephone contacts and subsequent mailings.

Materials/Equipment

Students were provided with personnel data sheets, half-fare transportation applications, payroll schedules, job-site information cards, an orientation to work booklet (My Job Campaign), and post high school/community college program pamphlets. Teachers received copies of the above together with a Placement and Referral Center for the Handicapped brochure and a P.L. 89-313 fact sheet. Similar materials were distributed to job supervisors. All materials were reported to be readily available, highly motivating to students, and consistent with both their needs and the goals of the program.

Promising Activities

This component provided realistic, concrete learning experiences to handicapped students and introduced the requirements of employment and an opportunity to develop general job skills and self awareness. The tax-levy stipends received by the trainees promoted a commitment to the paid work ethic, as indicated by excellent attendance records and on-the-job performance, and provided experience in handling personal finances.

The educational benefits of this component were mutual; not only did the trainees gain experience, but the employers, job supervisors, and

fellow employees reported that they overcame many of their stereotyped notions about handicapped workers. Specifically, students demonstrated positive social skills and had an excellent rapport with co-workers and supervisors. In addition, the students' level of productivity compared favorably with the needs of the employing organization and those of regular employees.

Inhibiting Factors

In common with the other program components, Component 4.0 began late, thereby truncating the length of student participation in job training. Although delays were due to unforeseen funding complications, prompt start-up would enhance benefits to students.

Achievement Data

To measure student development of general job skills in response to training, students were rated by their site supervisors on the San Francisco Vocational Competency Scale (S.F.V.C.) at the beginning and end of their work experience. This assessment consists of 30 items which measure job-appropriate behaviors (i.e., punctuality, initiative, ability to read and follow directions, and response to criticism). The criterion for attainment of the program's objective was a statistically significant ($p<.05$) increase in scores. To determine whether the objective was attained, a t test for correlated means was applied to the data. (See Table 5.) Pupils increased from a mean raw score of 99.8 to a mean of 105.2, a gain (5.2) that was statistically significant ($t = 4.96$, $df = 28$, $p<.01$). This finding indicates that the program's objective was met.

TABLE 5

COMPARISON OF PRE- AND POSTTEST RATINGS
OF STUDENT JOB TRAINEES
ON THE SAN FRANCISCO VOCATIONAL
COMPETENCY SCALE
(SUBCOMPONENT 4.0)

	Pre-test	Posttest	Mean Gain	t
Mean	99.79	105.03	5.24	4.96**
S.D.	20.19	19.27	5.69	
N	29	29		

**$p<.01$

- In response to job training, student trainees showed a statistically significant gain in general job skills as measured by the San Francisco Vocational Competency Scale.

IV. CONCLUSIONS AND RECOMMENDATIONS

Analyses of data gathered to evaluate the components and subcomponents of the P.L. 89-313 program indicate that most of its objectives were either met or exceeded. Students demonstrated positive growth in communication, mathematics, school-related behaviors, self-help and societal/community-living skills, social interactions, and vocational competencies. In addition, observations and interviews indicated that, in most cases, program services met the individual needs of the students and supplemented basic instructional activities.

Since only one of the subcomponents of the 1980-81 program cycle was replicated during 1981-82, direct comparisons between these cycles are tenuous. The findings for the single replicated subcomponent (Subcomponent 3.1 for Deaf/Mentally Retarded) indicate that the level of pupil achievement for the current cycle exceeded that observed for the previous year.

While the 1980-81 and 1981-82 cycles are not directly comparable, the absolute effectiveness of each program is suggested by the relative percentages of the target populations attaining or nearly attaining their respective individual short-term objectives. The analysis of data for the 1980-81 program revealed that only 14 percent of the 514 target students mastered at least 75 percent of their short-term objectives; the comparable statistic for the 527 students served in the current cycle was 70 percent. Analysis of these data by type of skill demonstrates the ubiquity of the increased gains in achievement for the current program cycle. In 1980-81 the 75-percent criterion was attained by nine percent, 26 percent,

and seven percent of the students in affective and daily-living behavior, academics, and prevocational and occupational education, respectively; the comparable statistics for 1981-82 were 71 percent, 72 percent, and 62 percent.

Last year's evaluation found that allocating P.L. 89-313 funds for direct service by supplementary personnel is inefficient due to (1) difficulty in hiring qualified staff for a short-term reimbursable program, and (2) the scatter of eligible students throughout the city. Indeed, the 1980-81 program served only one or two students in each of 185 sites. Accordingly, the evaluation report suggested that it would be more expeditious and cost effective to use these funds to purchase instructional materials and equipment to supplement the students' basic special education program.

The suggested change in service priorities is reflected in the budget for the 1981-82 program cylce. Figure 3 depicts the relative percentage of the P.L. 89-313 budget allocated for materials and personnel for the past (1980-81) and current (1981-82) school years. Although almost the entire budget for the past year was allocated for personnel, in the current year practically two-thirds (65.4 percent) was expended on instructional materials. Interviews of program staff and classroom teachers revealed that, in most cases, the teachers were consulted in selecting the materials to ensure that they appropriately supplemented the individual educational programs of each student. Moreover, observations showed that, overall, these materials were effectively integrated into individualized lessons and contributed to the educational adjustment

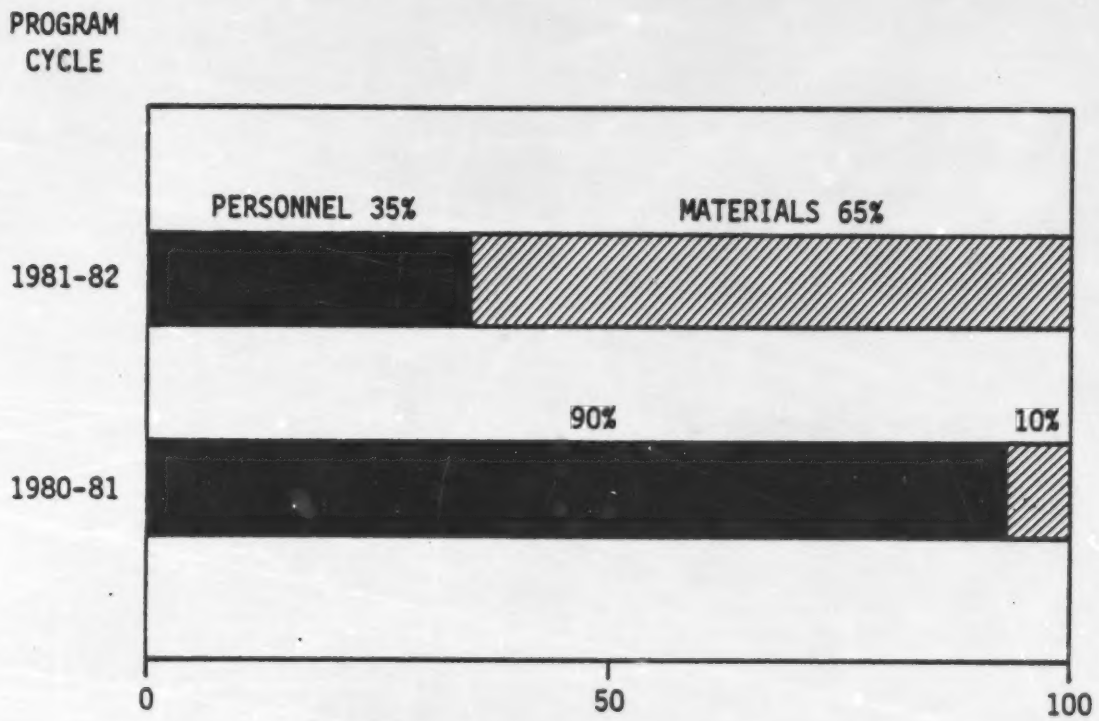

FIGURE 3. RELATIVE PERCENTAGE OF P.L. 89-313 BUDGET ALLOCATED FOR PERSONNEL AND MATERIALS FOR THE 1980-81 AND 1981-82 PROGRAM YEARS.

and advancement of eligible students. Relative to the 1980-81 program, the association between increased allocations for appropriate instructional materials and increased gains in measures of student achievement suggest a causal relationship.

The conclusions drawn from the findings of this evaluation lead to the following recommendations for further enhancing the observed effectiveness of the program:

--Since evidence suggests that the purchase of supplementary instructional supplies seems to be a more expeditious and effective use of these entitlement funds than personnel a substantial portion of the program budget should continue to be allocated for the former.

--To ensure the use of program-purchased materials for optimal pupil benefit, supervisory staff should train and monitor teachers.

--Efforts should be made to gain early project approval and delivery of supplies to ensure that services are planned and provided in a timely manner.

--Project personnel should place greater emphasis upon the field-contact and site-visit aspects of the program to ensure better rapport with school staff, disseminate information more effectively, and optimize direct implementation.

--Program coordinators should request additional input from school-based personnel regarding the purchase of specific instructional aids to ensure an even better match between student needs and program services.

--In-service student-assessment workshops should be offered to all project-related staff to ensure uniform test administration procedures and reliable results.

--A systematic set of record-keeping procedures, including a log to document materials use, should be maintained.

APPENDIX

TABLE A.1

FREQUENCY DISTRIBUTION OF THE
MASTERY OF PROBE-LEVEL A TEST OBJECTIVES
(SUBCOMPONENT 1.1)

Number of Objective Mastered	Number of Students	Relative Percent	Cumulative Percent
6 or more	8	9.3	9.3
5	6	7.0	16.3
4	12	13.9	30.2
3	14	16.3	46.5
2	33	38.4	84.9
1	3	3.5	88.4
0	10	11.6	100.0
	86	100.0	

TABLE A.2

FREQUENCY DISTRIBUTION OF THE
MASTERY OF PROBE-LEVEL B TEST OBJECTIVES
(SUBCOMPONENT 1.1)

Number of Objective Mastered	Number of Students	Relative Percent	Cumulative Percent
6 or more	4	8.0	8.0
5	3	6.0	14.0
4	1	2.0	16.0
3	6	12.0	28.0
2	31	62.0	90.0
1	3	6.0	96.0
0	2	4.0	100.0
	50	100.0	

TABLE A.3

FREQUENCY DISTRIBUTION OF THE
MASTERY OF PROBE OBJECTIVES,
LEVEL A AND LEVEL B COMBINED
(SUBCOMPONENT 1.1)

Number of Objective Mastered	Number of Students	Relative Percent	Cumulative Percent
6 or more	12	8.8	8.8
5	9	6.6	15.4
4	13	9.6	25.0
3	20	14.7	39.7
2	64	47.1	86.8
1	6	4.4	91.2
0	12	8.8	100.0
	136	100.0	

TABLE A.4

FREQUENCY DISTRIBUTION OF THE
MASTERY OF OBJECTIVES ON THE
BEHAVIORAL CHARACTERISTICS
PROGRESSION
(COMPONENT 2.0)

Number of Objective Mastered	Number of Students	Relative Percent	Cumulative Percent
6 or more	7	9.0	9.0
5	3	1.6	10.6
4	10	5.3	15.9
3	17	9.0	24.9
2	57	30.3	55.2
1	73	38.9	94.1
0	11	5.9	100.0
	188	100.0	

TABLE A.5

FREQUENCY DISTRIBUTION OF
ATTENDANCE PERCENTAGE FOR STUDENTS
IN THE HEARING-IMPAIRED PROGRAM
(SUBCOMPONENT 3.2)

Percent of Days Attended	Number of Students	Relative Percent	Cumulative Percent
100%	3	12.5	12.5
90-99%	13	54.2	66.7
80-89%	3	12.5	79.2
70-79%	4	16.7	95.9
60-69%	0	-	95.9
50-59%	1	4.1	100.0
Program Uncompleted	2	-	-
	26	100.0	